

Agriculture Affected by South Florida Program?

KEN KONOMI (K10605-1)



Hydrologist Reza Savabi (right) and hydrologic technician Nicholas Cockshutt monitor soil moisture fluctuations near the Everglades National Park. This investigation is part of improving water management on agricultural areas.

EVERGLADES NATIONAL PARK (K10605-2)



Aerial view of the "River of Grass" in the Everglades, South Florida.

In 1947, writer and conservationist Marjory Stoneman Douglas called attention to the dangers facing Florida's Everglades in a book called "The Everglades: River of Grass." At that time, many considered this unique natural ecosystem to be a vast swamp of limited value. Now, more than half a century later, the Everglades National Park and adjacent lands are undergoing a Comprehensive Everglades Restoration Plan (CERP).

But how will the plan affect the more than 23,000 people directly involved in South Florida agriculture?

"Farmers in the area have taken a key role in promoting the need for scientific investigation into the possible impact of the CERP on the sustainability of agriculture in South Florida," says M. Reza Savabi, a hydrologist with the ARS Subtropical Horticulture Research Station in Miami, Florida.

With federal and state government support, CERP is in its third year. The South Florida Water Management District and U.S. Army Corps of Engineers play major roles in the effort. Savabi collaborates with both of these agencies, as well as the University of Florida, Florida International University, University of Miami, Florida A&M University-Tallahassee, U.S. Geological Survey, and the South Dade Soil and Water Conservation District. These organizations provide agro-hydrology data. Savabi and colleagues at the Miami lab provide the knowledge and technology needed to improve water management on agricultural areas while maintaining environmental quality in South Florida.

Savabi first got involved with the Everglades restoration project 5 years ago, after local farmers sought help from ARS to address potential water and crop-production issues related to the project. Savabi joined the Miami station and established the ARS Everglades Agro-Hydrology Project in 1998.

In South Florida, Savabi and his colleagues monitor soil water balance, climate, and the quality and movement of water in the Biscayne aquifer, checking instrumentation several times a week. In cooperation with the U.S. Army Corps of Engineers and local farming groups, he prepares Geographic Information Systems land-use maps; conducts research on soil water intake and on improving soil quality by use of soil amendments; and works on a model to predict the amount of water in the soil, quality of water, evaporation, and where and when flooding and damage to crops or trees might occur.

The model under development, called the Everglades Agro-Hydrology Model, simulates water balance, agrochemical movements, soil tillage, irrigation, and crop growth. It's aimed at helping farmers weigh alternative management or cropping systems to cope with the hydrologic changes that may result from the Everglades restoration plan.

Savabi has received help with this very detailed model from other hydrologists and modelers, including scientists from West Lafayette, Indiana; Temple, Texas; and Tifton, Georgia.

The model is beginning to be tested in Miami-Dade County, where farmers provide information about yields and when they plant, fertilize, and perform other agronomic tasks. Once calibrated, the model will be used on South Florida farms. Savabi hopes to expand its use throughout Florida, U.S. southeastern coastal agricultural areas, and abroad.—
By **Alfredo Flores**, ARS.

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